

REMARKS

Claims 20-34 and 49-60 are pending in this application. By this Amendment, claim 20 is amended and new claims 58-60 are added. Claims 22-30 and 57 are withdrawn from consideration in the September 8, 2004 Office Action. Applicant also assumes that claims 31-34 have been withdrawn from consideration, as these claims are technically related to claims 22-30 and 57, and are linked to these claims via linking claim 57.

I. Election of Group X

The Office Action requires an election of claims in Group X (claims 20, 21 and 49-56) or XI (Claims 22-30 and 57). Applicant confirms the provisional election to prosecute claims in Group X (claims 20, 21 and 49-56). Applicant submits that new claims 58-60 also correspond to elected Group X.

II. Claims 20, 21, 49-56 and 58-60 Define Patentable Subject Matter

The Office Action rejects claims 20, 21 and 49-56 under 35 USC §102(b) over US Patent 4,478,094 to Salomaa et al. This rejection is respectfully traversed.

Independent claim 20 recites a linear servo motor that drives the plunger to slide within the bore, sliding of the plunger causing fluid to move between the pipette tip holder and the bore. Salomaa discloses a stepper motor 46 and lead screw drive mechanism 48 that drive an actuator bar 42 to move vertically, causing attached plunger rods 40 to move vertically in respective pipettes 36. However, Salomaa does not disclose the use of a linear servo motor that drives a plunger in a pipette, only a rotary stepper motor and lead screw drive. Although Salomaa discloses at col. 7, lines 62-67 that other precise positioning means, such as direct current servo motors, may be used for the plunger mechanism, this disclosure does not explicitly teach the use of a linear servo motor in place of a rotary stepper motor. The inventors have confirmed that the disclosure in Salomaa in column 7, lines 62-67 would at best disclose the use of other rotary DC servo motors, since other rotary motors could be used to replace the disclosed rotary stepper motor. Salomaa does not, however, disclose the use of a linear motor of any type, or disclose how such a linear motor could be used in the disclosed system. Thus, Salomaa does not anticipate claim 20, or claims 21 and 49-56 which depend from claim 20.

Further, claim 20 would not have been obvious in view of the disclosure of Salomaa. Firstly, Salomaa does not disclose the claimed linear servo motor as discussed above, and therefore does not teach or suggest all of the features of claim 20. Accordingly, Salomaa is itself

incapable of rendering claim 20 obvious since it does not teach or suggest all of the claimed features.

Also, there would have been no motivation to modify the Salomaa device to incorporate a linear servo motor in place of the stepper motor 46. There is no disclosure in Salomaa that a linear motor could operate in place of the stepper motor 46, and therefore it is not clear from Salomaa how a linear servo motor (which generates linear motion) would actuate the lead screw drive mechanism 48 (which requires a rotary input) or otherwise cause the actuator bar 42 and plunger rods 40 to move in an appropriate fashion. For example, Salomaa converts the rotary motion of the stepper motor 46 into linear motion of the bar 42 using a rack 32 and pinion 30 (see Figs. 1 and 8). Thus, one may presume that other rotary drive devices may be used in place of the stepper motor 46. However, a linear motor outputs linear motion, and thus is not suitable for interacting with the lead screw drive mechanism 48. It is only through impermissible hindsight using this application as a guide (and not considering only the disclosure of Salomaa) that one would conclude the asserted modification to be obvious. Accordingly, Salomaa provides no motivation to make the asserted modification, since Salomaa provides no teaching or suggestion of how to incorporate a linear motor into the disclosed device.

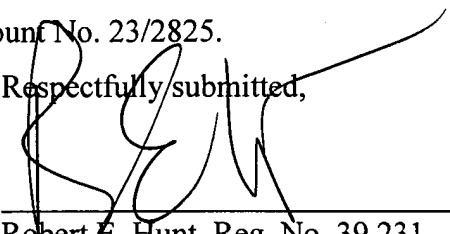
Applicant also submits that there would have been no reasonable expectation of success in replacing the stepper motor in Salomaa with a linear motor as asserted in the Office Action. Applicant submits that Salomaa (and all other art of which the Applicant is aware) teaches the use of a stepper motor or other rotary drive means to move pipette plungers because those in the art viewed linear motors as not suitable for use in driving pipette plungers. Applicant submits that linear motors were not thought suitable in this application because of the perception that linear motors were incapable of overcoming the sometimes high frictional forces (particularly sticking friction) and/or were incapable of highly accurate movement when simultaneously moving an actuator bar (relative to one or more guide bars) and multiple plungers attached to the bar (relative to respective pipettes). For example, it was thought that use of a linear motor in the presence of high frictional forces would result in jerky or otherwise uncontrolled movement of the actuator bar and plungers, resulting in poor volume control for the pipetting device. The lead screw-style drive of Salomaa alleviates such concerns, and renders a linear drive arrangement unnecessary and/or undesirable.

Accordingly, claim 20, and claims 21 and 49-56 are allowable. Withdrawal of the §102 rejection is requested.

CONCLUSION

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Respectfully submitted,



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